



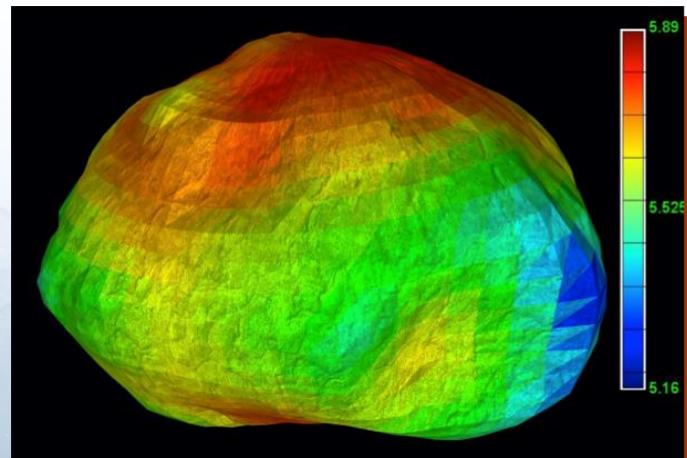
Johnson Space Center

Phobos Mobility Simulation

Phobos, the larger of Mars' moons, provides a potential staging location for human exploration of the Martian surface. Its low gravity (about 1/200th of Earth) and lack of atmosphere makes it an attractive destination before a more complex human landing on Mars is attempted.

While easier to approach and depart than Mars itself, Phobos provides unique challenges to visiting crews. It is irregularly shaped, so its local gravitational field does not always point straight down with respect to the visible horizon. It is very close to Mars and tidally locked, so the Martian gravity gradient and applied acceleration greatly affect the perceived surface gravity direction and magnitude.

This simulation allows the assessment of unique mobility approaches on the surface of Phobos, including hopping in particular. This approach utilizes rechargeable electromechanical effectors to "hop" around the surface of Phobos, taking advantage of its unique environment while conserving fuel to extend mission duration and reduce surface contamination.



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